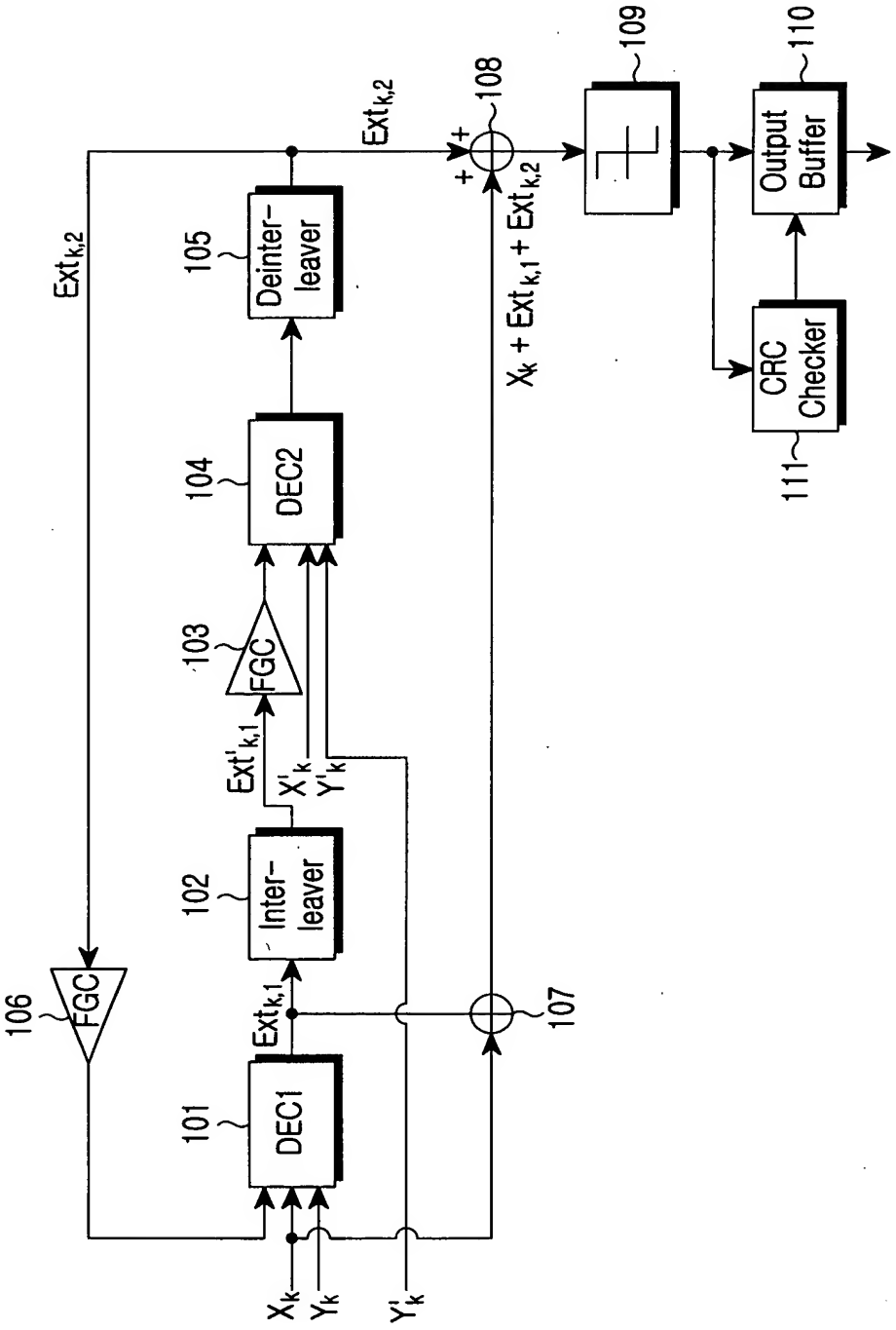

DEC1
101
Inter-leaver
102
FGC
103
DEC2
104
Deinter-leaver
105
FGC
106
107
108
109
Output Buffer
110
CRC Checker
111
$Ext_{k,1}$
$Ext_{k,2}$
$Ext'_{k,1}$
X_k
Y_k
Y'_k
$X_k + Ext_{k,1} + Ext_{k,2}$

FIG.1

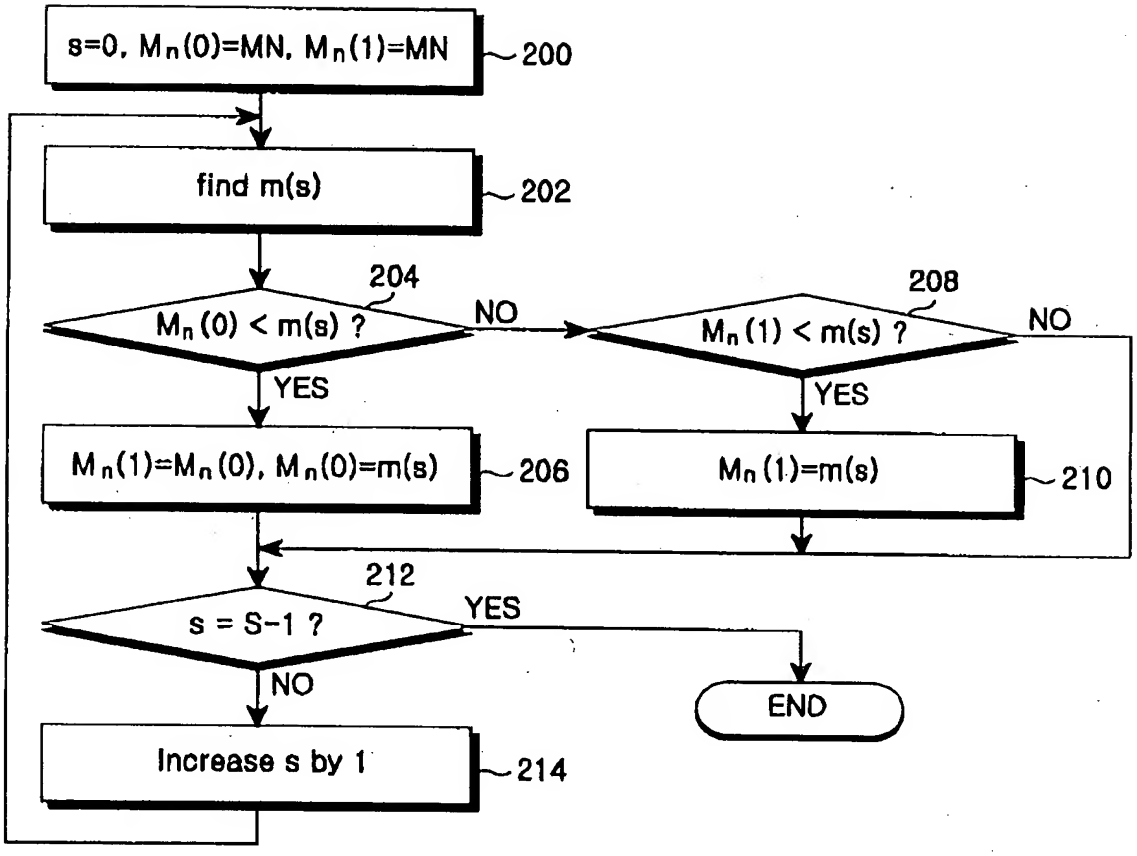

s=0, Mn(0)=MN, Mn(1)=MN
200
find m(s)
202
204
Mn(0) < m(s) ?
NO
YES
208
Mn(1) < m(s) ?
NO
YES
Mn(1)=Mn(0), Mn(0)=m(s)
206
Mn(1)=m(s)
210
212
s = S-1 ?
YES
NO
END
Increase s by 1
214

FIG.2

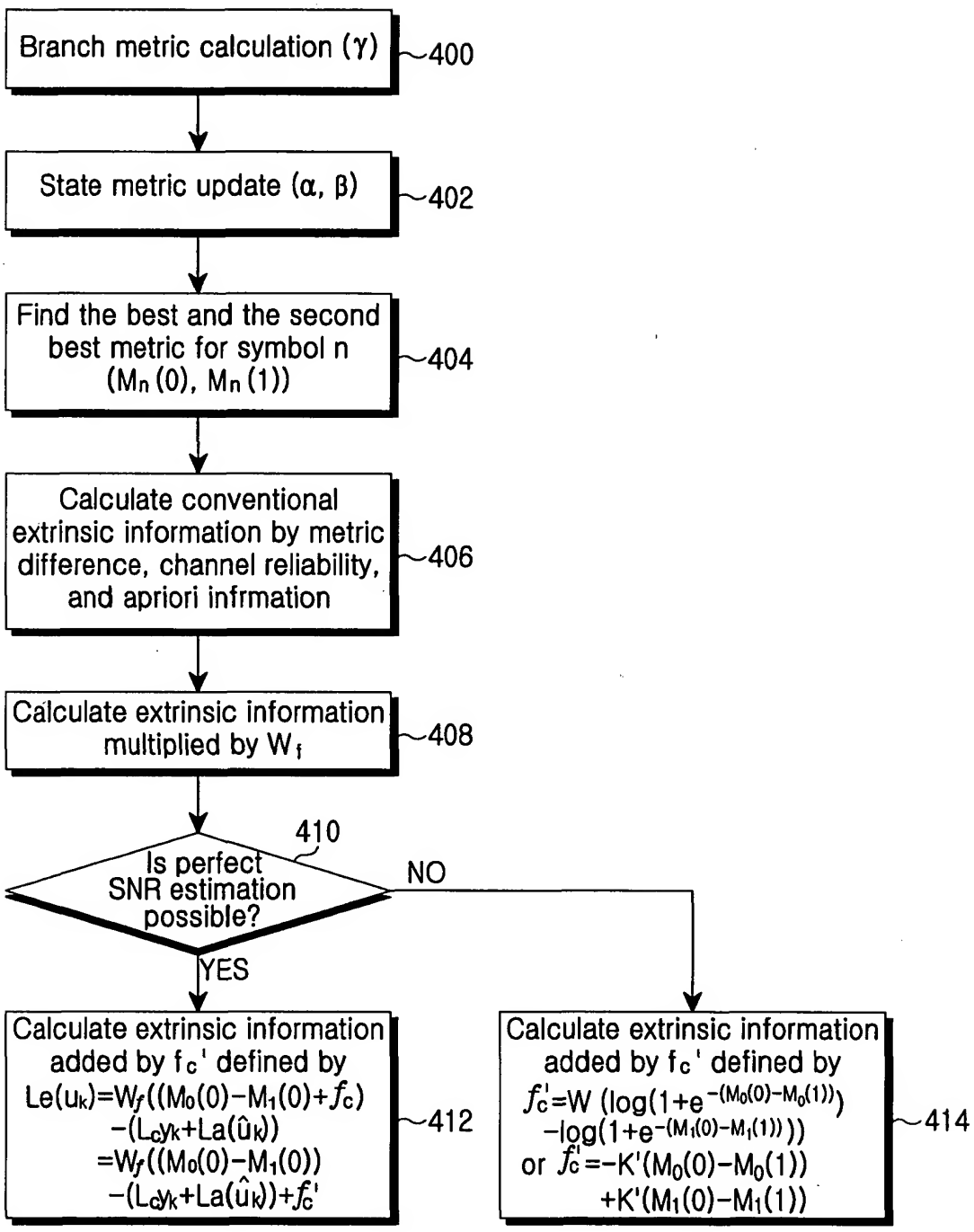

Branch metric calculation (γ)
400
State metric update (α, β)
402
Find the best and the second best metric for symbol n (Mn (0), Mn (1))
404
Calculate conventional extrinsic information by metric difference, channel reliability, and apriori infrmation
406
Calculate extrinsic information multiplied by Wf
408
410
Is perfect SNR estimation possible?
NO
YES
Calculate extrinsic information added by fc' defined by
Le(uk)=Wf((M0(0)−M1(0)+fc)
−(Lcyk+La(ûk))
=Wf((M0(0)−M1(0))
−(Lcyk+La(ûk))+fc'
412
Calculate extrinsic information added by fc' defined by
fc'=W (log(1+e−(M0(0)−M0(1)))
−log(1+e−(M1(0)−M1(1))))
or fc'=−K'(M0(0)−M0(1))
+K'(M1(0)−M1(1))
414

FIG.3

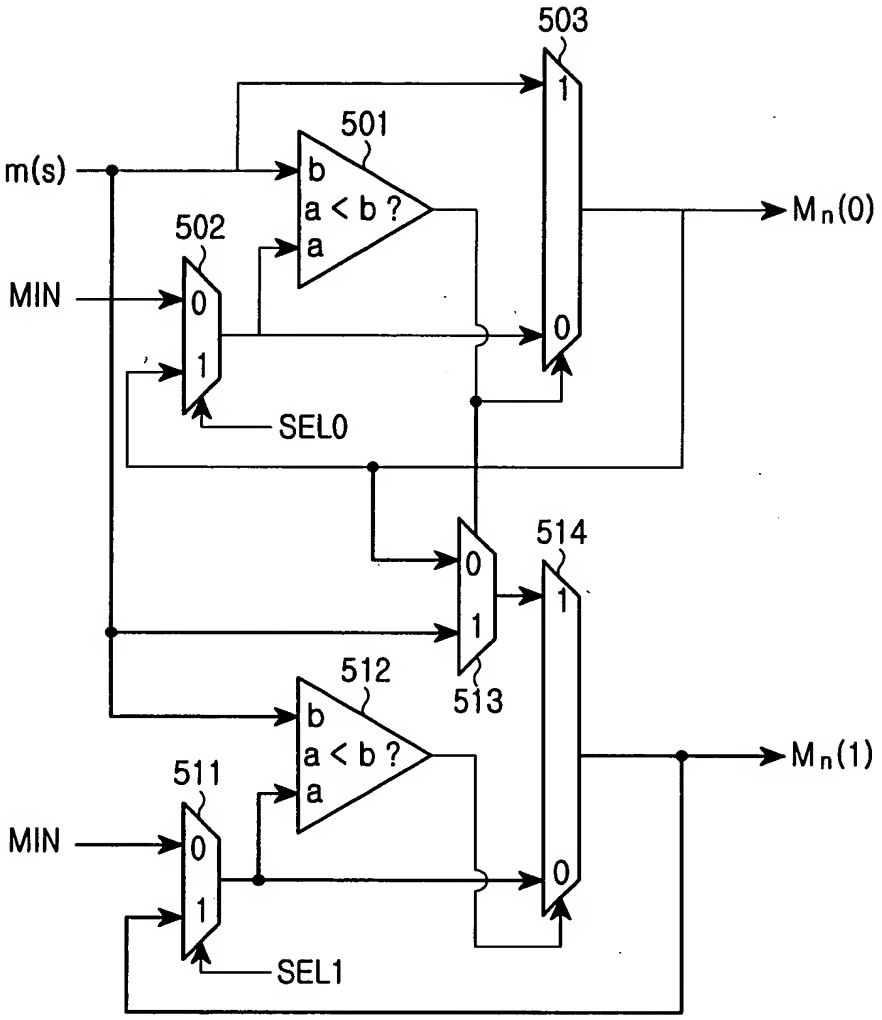

503
501
m(s)
b
a < b ?
a
Mn(0)
502
MIN
0
1
0
1
SEL0
514
0
1
1
513
512
b
a < b ?
a
Mn(1)
511
MIN
0
1
0
1
SEL1

FIG.4

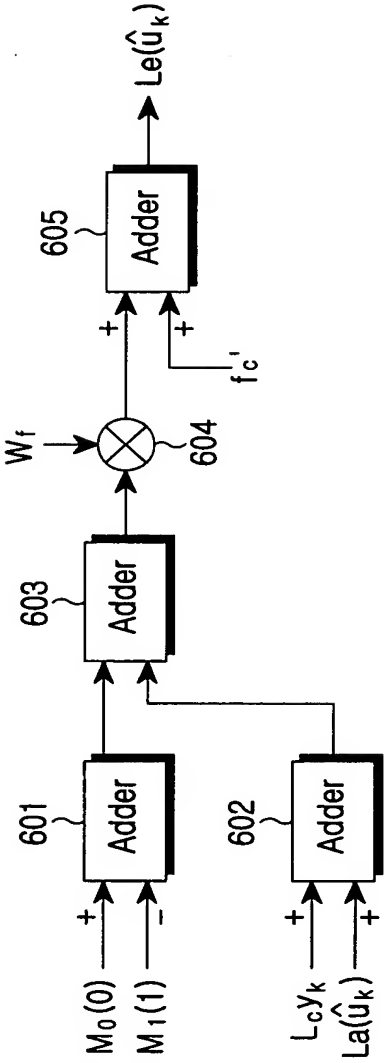

Le($\hat{u}_k$)
605
Adder
+
+
f_c
W_f
604
603
Adder
601
Adder
602
Adder
+
−
+
+
$M_0(0)$
$M_1(1)$
$L_c y_k$
La($\hat{u}_k$)

FIG.5

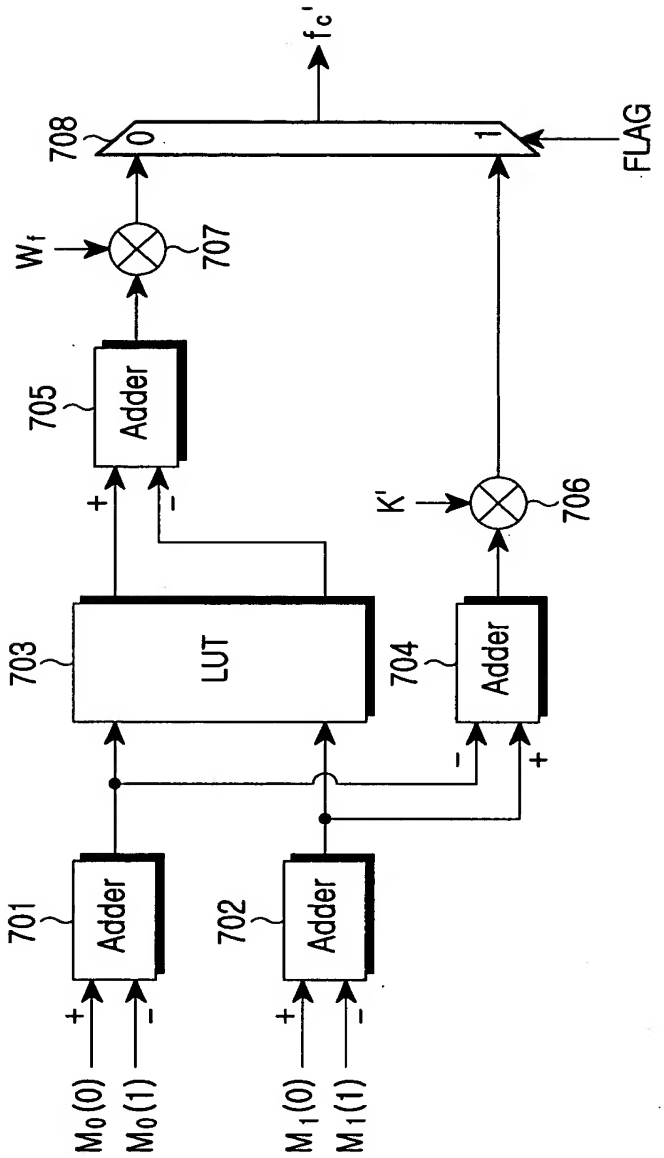
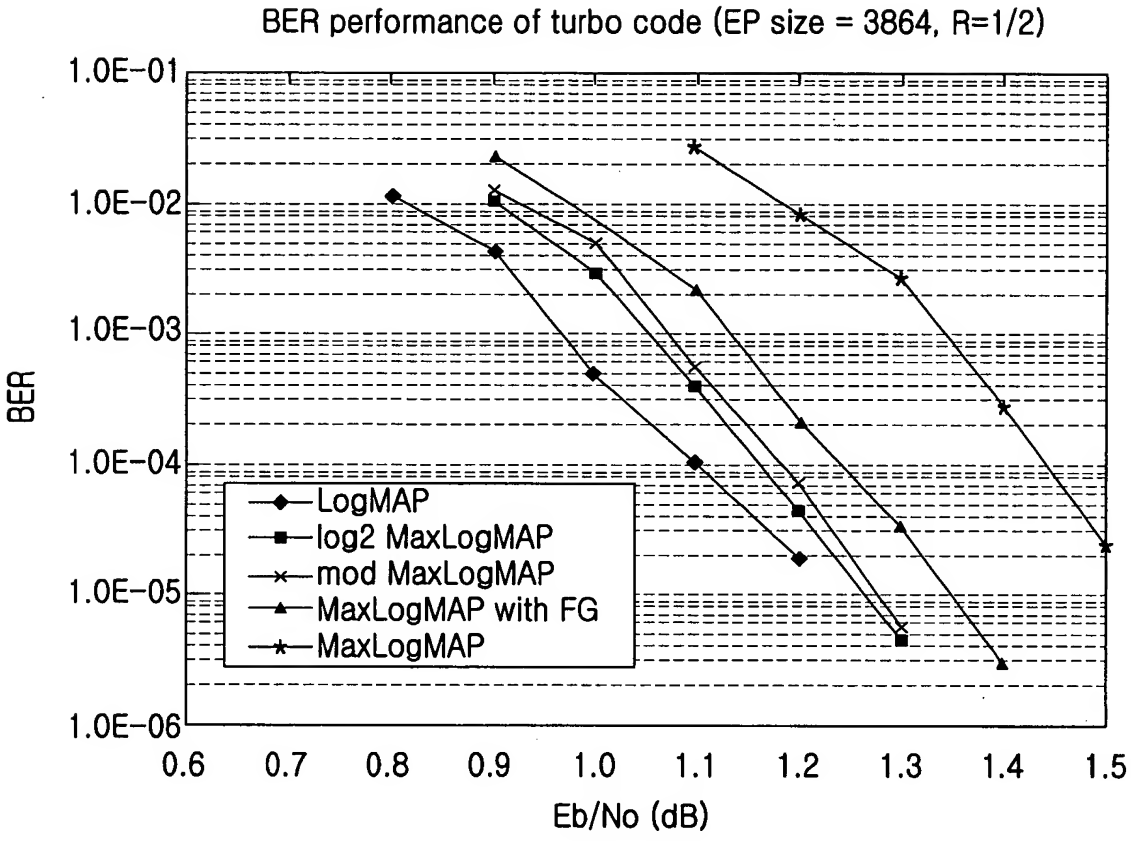
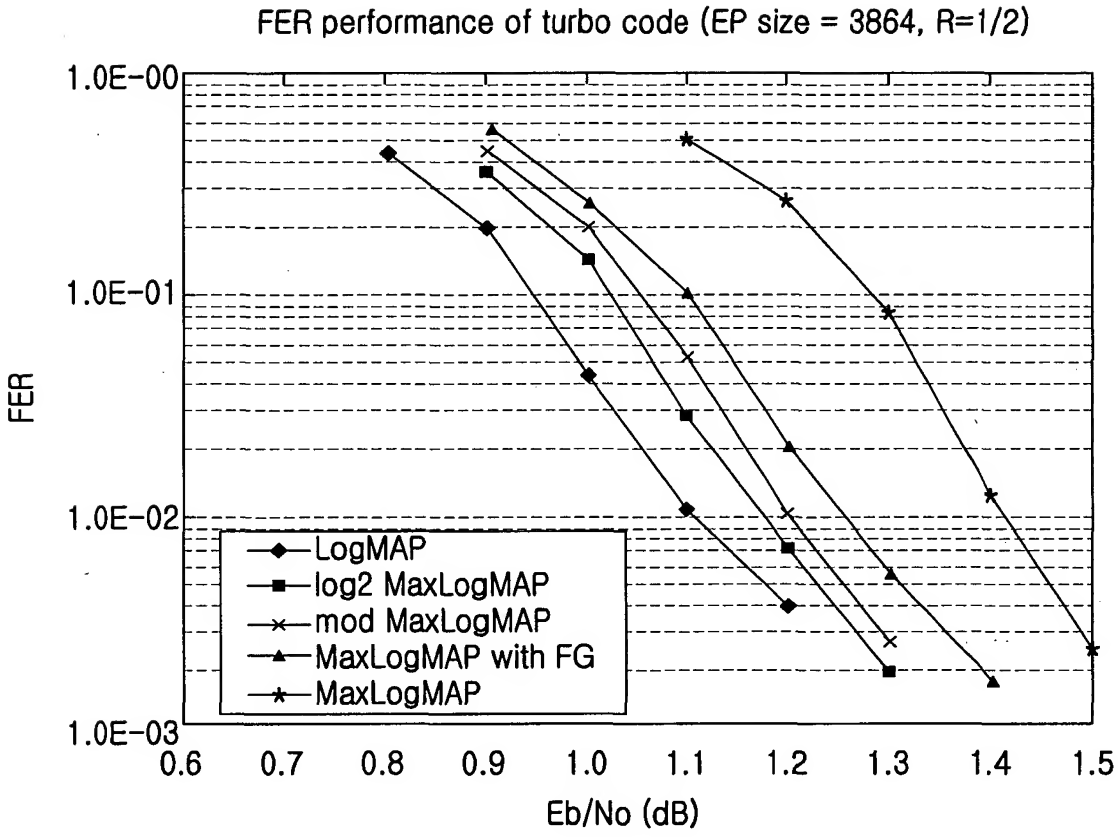

f_c'
708
0
1
FLAG
W_f
707
705
Adder
+
-
K'
706
703
LUT
704
Adder
-
+
701
Adder
702
Adder
+
-
+
-
$M_0(0)$
$M_0(1)$
$M_1(0)$
$M_1(1)$

FIG.6



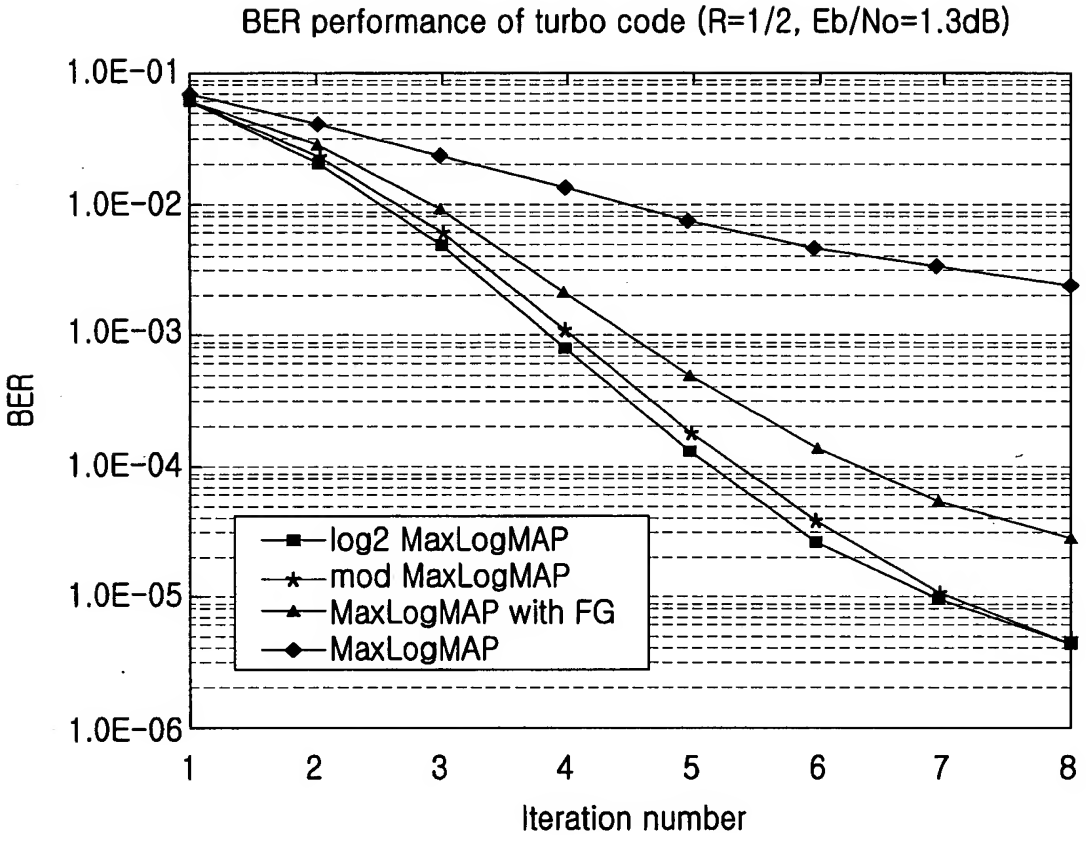
BER performance of turbo code (EP size = 3864, R=1/2)

FIG.7



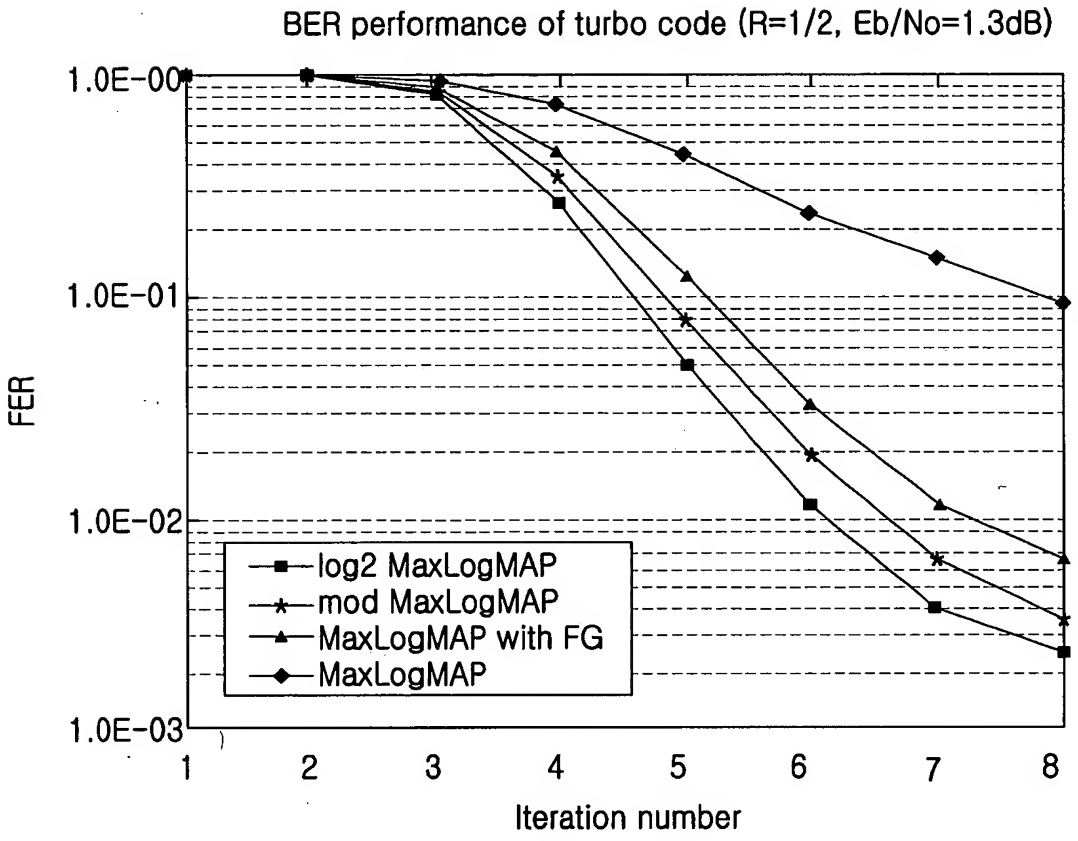
FER performance of turbo code (EP size = 3864, R=1/2).

FIG.8



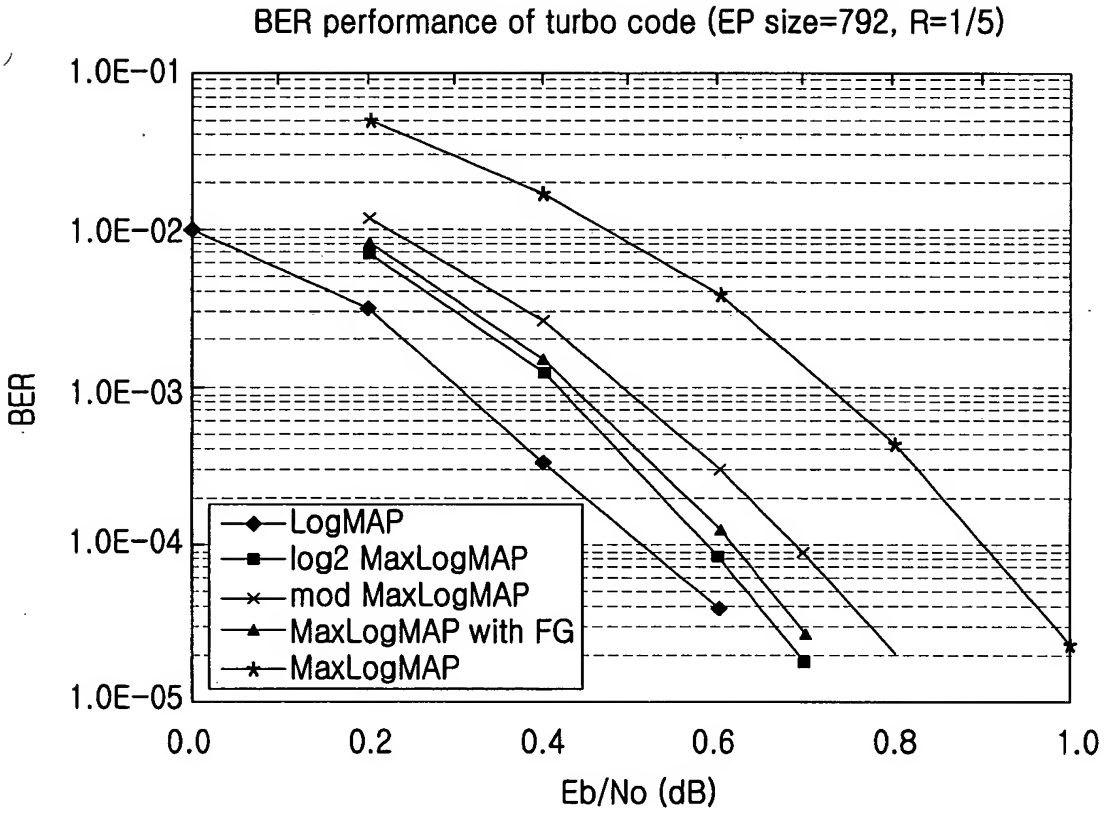
BER performance of turbo code over iterations
(EP size = 3864, R=1/2, Eb/nO=1.3dB)

FIG.9



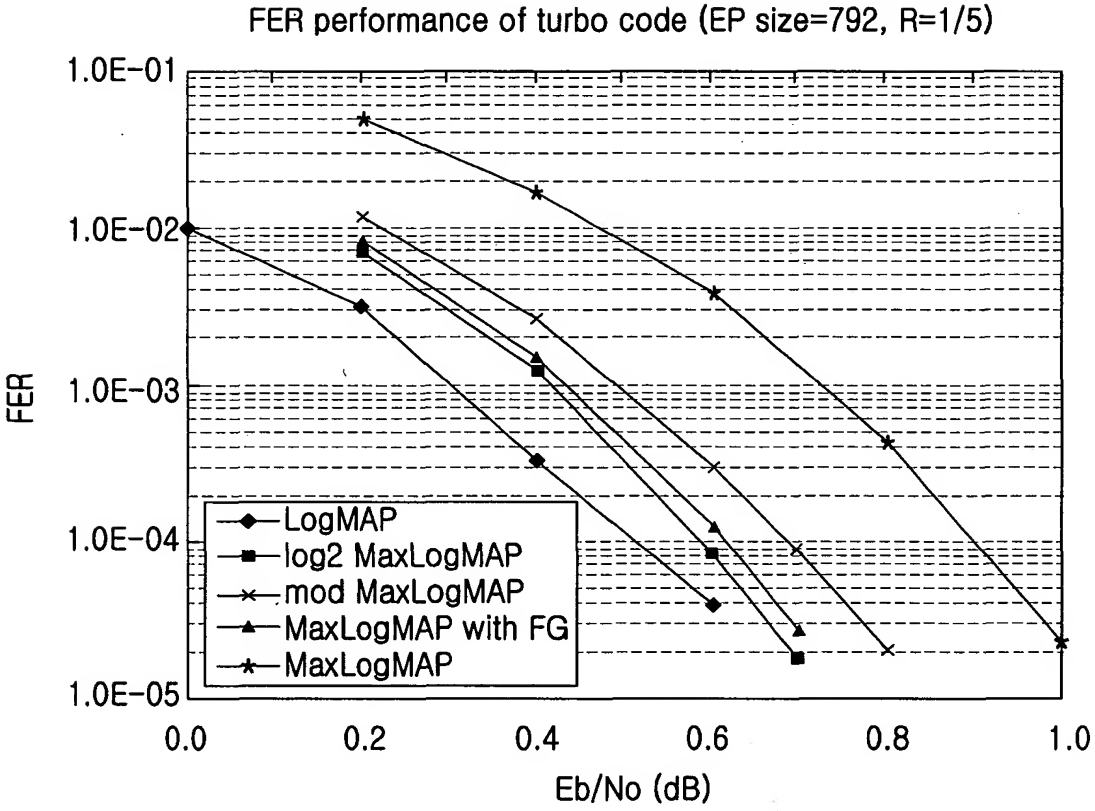
BER performance of turbo code over iterations
(EP size = 3864, R=1/2, Eb/nO=1.3dB)

FIG.10



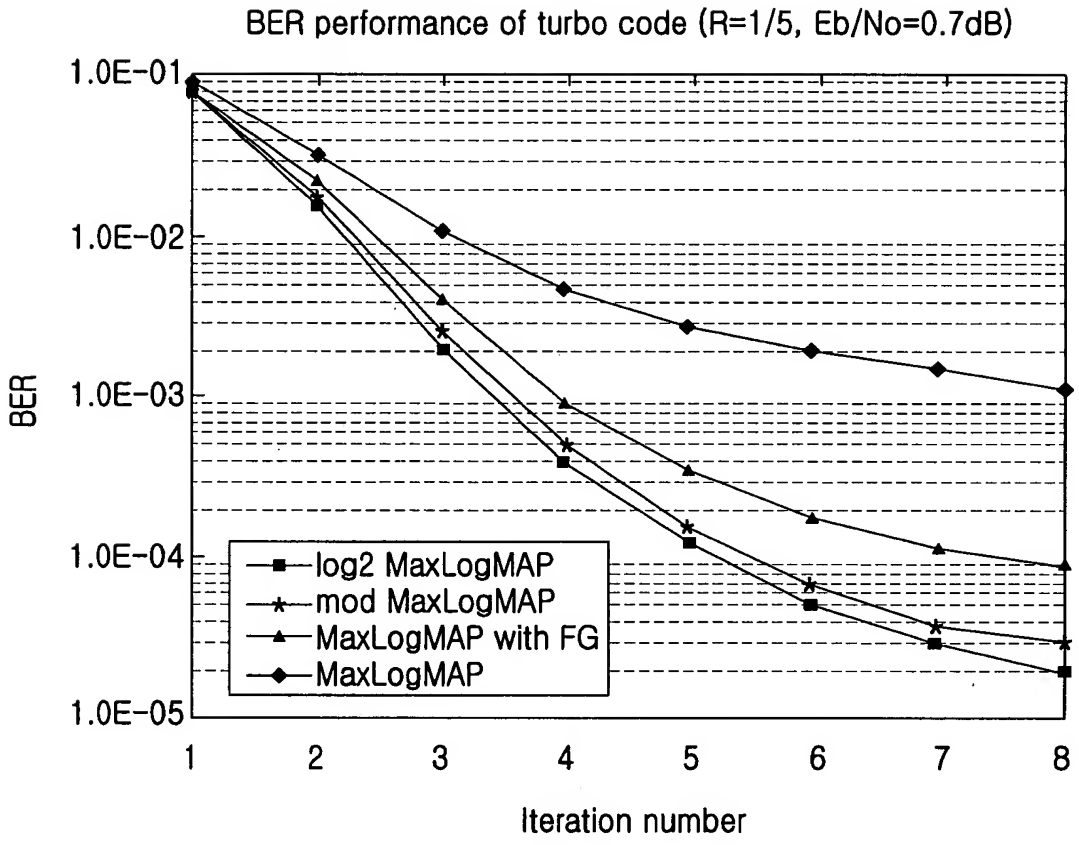
BER performance of turbo code (EP size=792, R=1/5)

FIG.11



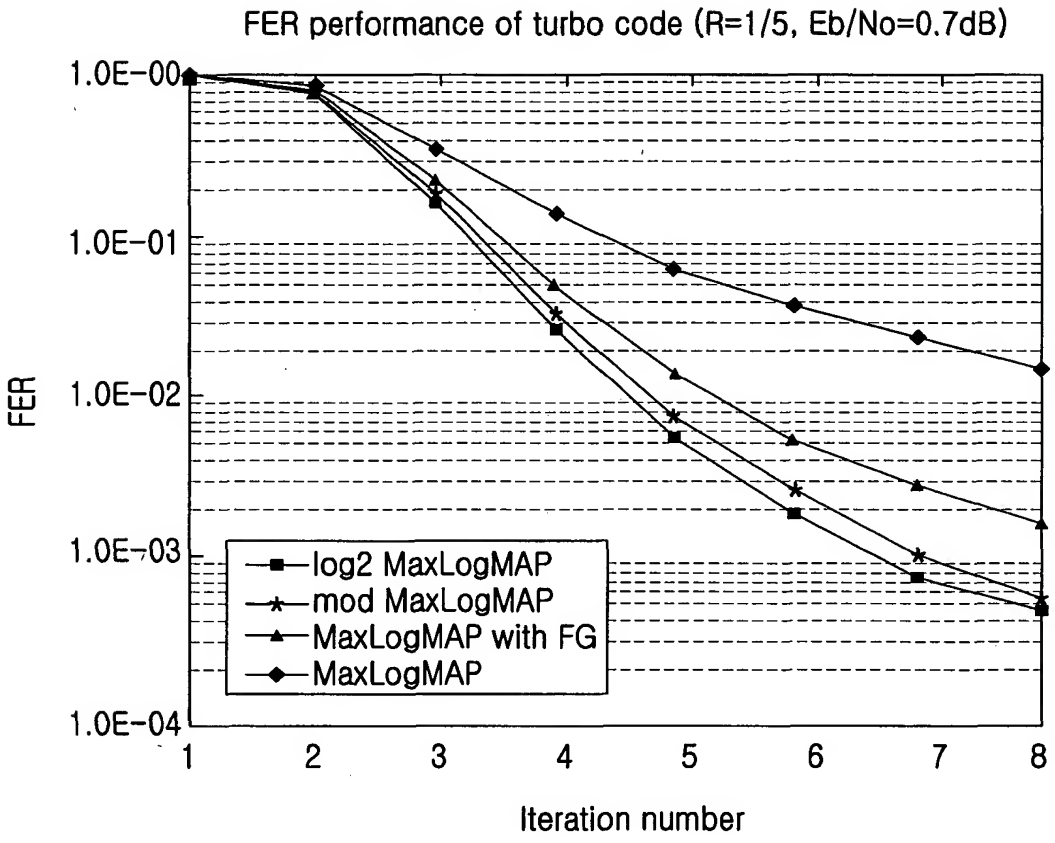
BER performance of turbo code (EP size=792, R=1/5)

FIG.12



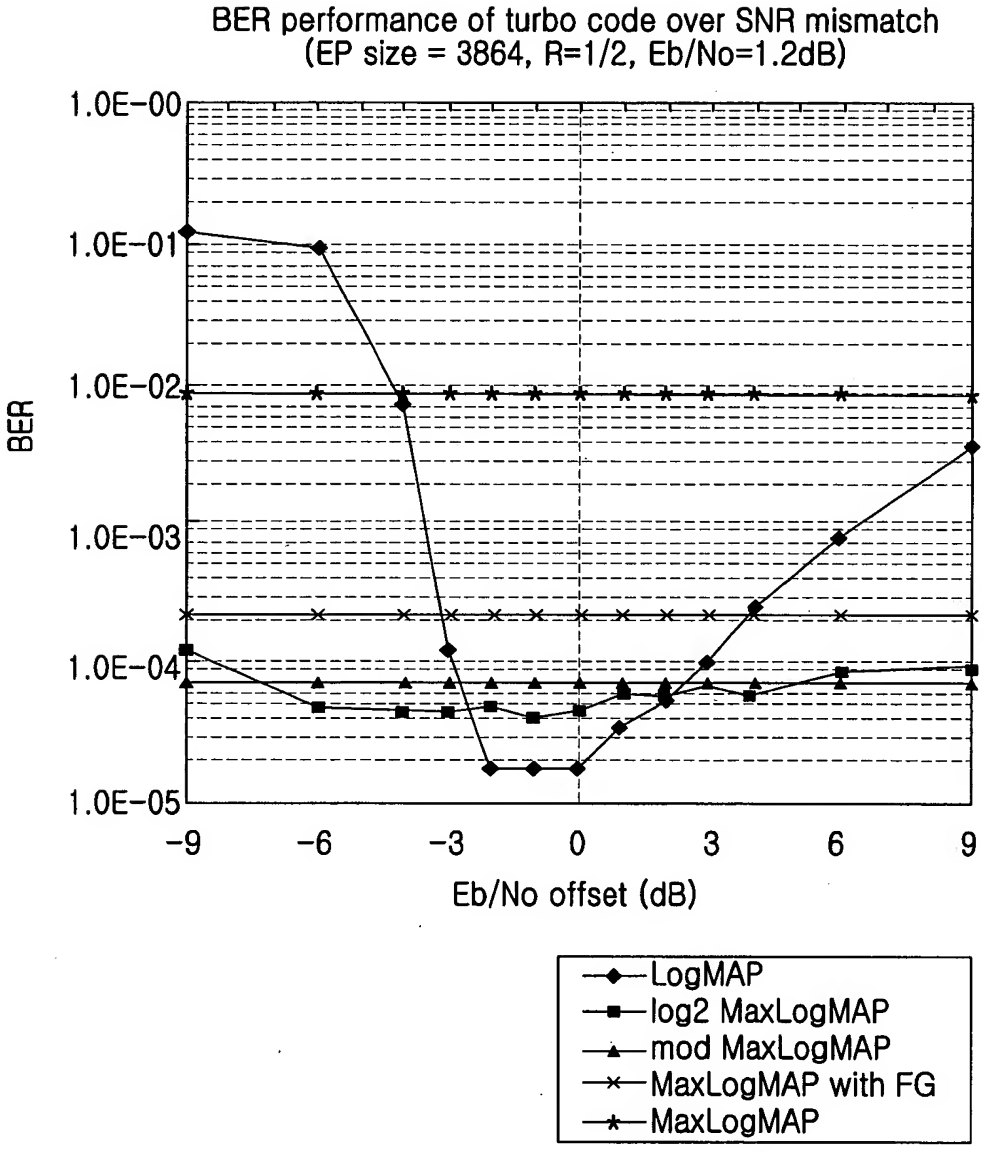
BER performance of turbo code over iterations
(EP size = 792, R=1/5, Eb/nO=0.7dB)

FIG.13



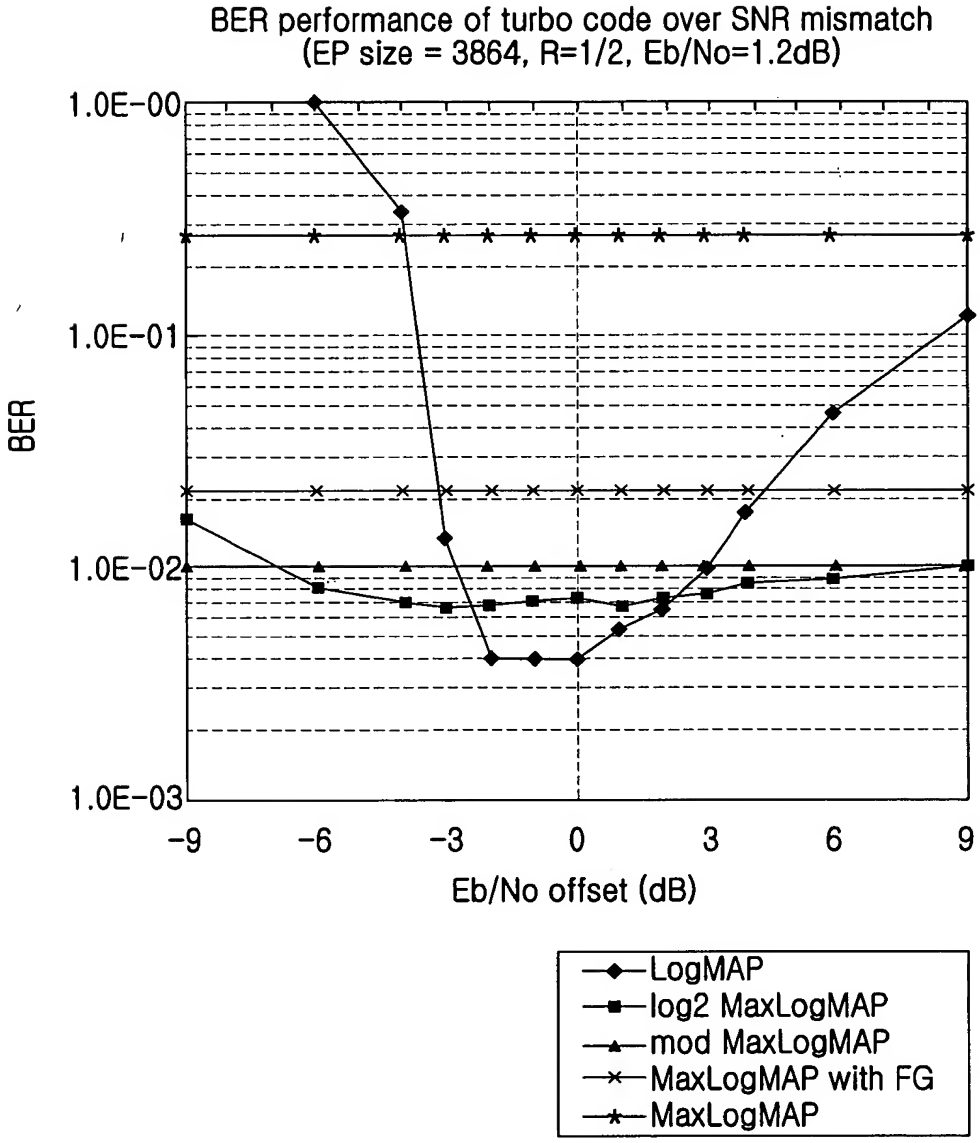
BER performance of turbo code over iterations
(EP size = 792, R=1/5, Eb/nO=0.7dB)

FIG.14



BER performance of turbo code over Eb/No offset
(EP size = 3864, Eb/No=1.2dB)

FIG.15



BER performance of turbo code over Eb/No offset
(EP size = 3864, Eb/No=1.2dB)

FIG.16